

Translation

PATENT COOPERATION TREATY

PCT/FR2003/002091



PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference PJ644-113PCT	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/FR2003/002091	International filing date ( <i>day/month/year</i> ) 04 juillet 2003 (04.07.2003)	Priority date ( <i>day/month/year</i> ) 11 décembre 2002 (11.12.2002)
International Patent Classification (IPC) or national classification and IPC C12Q 1/68		
Applicant CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of <u>5</u> sheets, including this cover sheet.  <input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).  These annexes consist of a total of <u>3</u> sheets.
3. This report contains indications relating to the following items:  I <input checked="" type="checkbox"/> Basis of the report II <input type="checkbox"/> Priority III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability IV <input type="checkbox"/> Lack of unity of invention V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement VI <input type="checkbox"/> Certain documents cited VII <input type="checkbox"/> Certain defects in the international application VIII <input type="checkbox"/> Certain observations on the international application

Date of submission of the demand 15 juin 2004 (15.06.2004)	Date of completion of this report 22 February 2005 (22.02.2005)
Name and mailing address of the IPEA/EP  Facsimile No.	Authorized officer  Telephone No.

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/FR2003/002091

## I. Basis of the report

### 1. With regard to the elements of the international application:\*

- ☒ the international application as originally filed
- ☒ the description:  
 pages \_\_\_\_\_ 1-24 \_\_\_\_\_, as originally filed  
 pages \_\_\_\_\_, filed with the demand  
 pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_
- ☒ the claims:  
 pages \_\_\_\_\_, as originally filed  
 pages \_\_\_\_\_, as amended (together with any statement under Article 19  
 pages \_\_\_\_\_, filed with the demand  
 pages \_\_\_\_\_ 1-19 \_\_\_\_\_, filed with the letter of 10 September 2004 (10.09.2004)
- ☒ the drawings:  
 pages \_\_\_\_\_ 1/20-20/20 \_\_\_\_\_, as originally filed  
 pages \_\_\_\_\_, filed with the demand  
 pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_
- ☐ the sequence listing part of the description:  
 pages \_\_\_\_\_, as originally filed  
 pages \_\_\_\_\_, filed with the demand  
 pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_

### 2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language \_\_\_\_\_ which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

### 3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

### 4. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets/fig \_\_\_\_\_

### 5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).\*\*

\* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).

\*\* Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/FR 03/02091

## V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

### 1. Statement

Novelty (N)	Claims	4-19	YES
	Claims	1-3	NO
Inventive step (IS)	Claims		YES
	Claims	1-19	NO
Industrial applicability (IA)	Claims	1-19	YES
	Claims		NO

### 2. Citations and explanations

#### 1.1 Reference is made to the following documents:

D1: US-A-4 238 757 (SCHENK JOHN F) 9 December 1980  
(1980-12-09)

D2: SOUTEYRAND E ET AL: "DIRECT DETECTION OF THE  
HYBRIDISATION OF SYNTHETIC HOMO-OLIGOMER DNA  
SEQUENCES BY FIELD EFFECT" JOURNAL OF PHYSICAL  
CHEMISTRY. B, MATERIALS, SURFACES, INTERFACES  
AND BIOPHYSICAL, WASHINGTON, DC, US, vol. 101,  
1997, pages 2980-2985, XP001040796 ISSN: 1089-  
5647

D3: TSURUTA H. ET AL: "Detection of the products of  
a polymerase chain reaction by an ELISA system  
based on an ion sensitive field effect  
transistor" JOURNAL OF IMMUNOLOGICAL METHODS,  
vol. 176, 1994, pages 45-52, XP009021947

D4: WO 03/054225 A (BIOCHIP TECHNOLOGIES GMBH;  
LEHMANN MIRKO (DE); MICRONAS GMBH (DE);) 3 July  
2003 (2003-07-03)

D5: WO 03/052097 A (MIYAHARA YUJI; HATTORI KUMIKO  
(JP); YASUDA KENJI (JP); HITACHI HIG) 26 June  
2003 (2003-06-26)

#### 1.2 Documents D4 and D5 have an earlier priority date

and/or filing date than the present international patent application. Therefore, the subject matter of these documents may be relevant as far as the present international patent application is concerned in the regional or national phase.

## 2. **Novelty**

2.1 Document D1 describes a field effect transistor wherein the active transistor region ("gate") is loaded with antibodies. When said transistor is contacted with a buffer containing the antigen specific to said antibody, interaction between the antibody and the antigen can be measured using a source/drain current. Measurement can be enhanced by reducing the salt concentration in the measurement buffer relative to the salt concentration in the interaction buffer between the antibody and the antigen (see D1, the abstract; figures 1 and 2; column 3, line 15 to column 6, line 45). D1 also discloses how a plurality of substances can be measured simultaneously (see D1, figure 3; column 5, line 42 to column 6, line 23) and how the measurements are carried out differentially (see D1, column 4, lines 11-39).

The subject matter of the claims is defined in terms of the differential measurement method.

However, no additional specific information on measurements is indicated in the claims (e.g. a measurement carried out in the time-dependent state or the steady state). It follows that the subject matter of claims 1 to 3 lacks novelty (PCT Article 33(2)).

2.2 The amendments submitted with the letter of 10

September 2004 do not cause the subject matter of the application to be extended beyond the content of the application as filed. Therefore, they are consistent with the provisions of PCT Article 34(2)(b).

**3. Inventive step**

- 3.1 Dependent claims 4 to 19 do not contain any features which, when combined with the features of any one of the claims to which they refer, might define subject matter that complies with the requirements of inventive step of the PCT, in the light of document D2, which describes the direct detection of oligonucleotide hybridisation using a field-effect transistor (D2, title; abstract; page 2981, figure 1; page 2983, figure 3, page 2985, figure 11) and document D3, which describes the detection of the products of a polymerase chain reaction using a field-effect transistor (D3, title; abstract; page 47, figure 1; page 50, figures 3 and 4).

**4. Industrial applicability**

- 4.1 The subject matter of the application, as defined in claims 1 to 19, appears to be industrially applicable (PCT Article 33(4)).